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**PHASE 2 YEAR 4  
ANNUAL PROGRESS REPORT  
HUDSON RIVER PCBs SUPERFUND SITE**

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*Prepared for:*

**GENERAL ELECTRIC**

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*Prepared by:*

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**June 2015**

**APPENDIX D**

**DATA ON PCB MASS REMOVED AND IN-RIVER PCB LOADS**

**Table 1**  
**Summary of Total PCB Load and Percent Release past Waterford<sup>1</sup>**

Year	Dredge Season	Duration (days)	Net Load Past Waterford (kg)		Mass Removed <sup>6</sup> (kg)		Mass Remaining <sup>6</sup> (kg)		% Release Past Waterford (%)	
			Total PCB	Tri+ PCB	Total PCB	Tri+ PCB	Total PCB	Tri+ PCB	Total PCB	Tri+ PCB
2009	May 15 - Oct 27	166	199	71.3	18,230	5,350	1,570	460	1.1%	1.3%
2011	Jun 6 - Nov 8	156	144	29.8	27,200	9,070	490	160	0.53%	0.33%
2012	May 9 – Nov 16	192	190	30.6	33,370	10,080	680	200	0.57%	0.30%
2013	April 29 – Nov 5 <sup>2,3</sup>	191	511	99.3	32,460	9,275	510	160	1.57%	1.07%
2014	May 7 – Nov 4 <sup>4</sup>	182	245	39.8	26,570	8,915	700	240	0.92%	0.45%
Post-2014 Dredging <sup>5</sup>			---				5,280	2,050	---	
Total for Project		887	1,289	270.8	137,830	42,690	9,230	3,270	0.94%	0.63%

Notes:

1. Prepared by Anchor QEA, LLC

2. Monitoring data from Green Island were used to calculate net loads in place of Waterford from Nov 2 through Nov 5, 2013 while dredging activities took place in CU 100.

3. Limited dredging occurred in CUs 51 through 54 during 2012 and the mass removed in those CUs during 2012 is included in the 2012 mass removed totals. These CUs were completed in 2013. The mass remaining in these CUs is included as part of the 2013 mass remaining values.

4. Dredging in land-locked area in reach 7 started on 7/17, and ended on 10/18.

5. Post-2014 dredging includes CUs 60, 65-3, 65-4, 65-5, 66, 94 through 96, 99-6, and 99-7.

6. PCB mass removed is calculated using SSAP and SEDC data for pass 1 and residual data for re-dredge passes; mass remaining is based on residual data only. Phase 1 (2009) PCB mass is calculated using Thiessen polygons; Phase 2 (2011-2014) mass is based on the method outlined in the Phase 2 Engineering Performance Standard, with minor modifications at EPA's approval.

**Table 2**  
**Summary of Daily PCB Load to Lower Hudson River during Phase 2 Year 4 Dredging Monitoring<sup>1</sup>**

Date	Net Load Past Waterford (g/day)		Mass Removed (kg)		Cumulative Net Load Past Waterford (kg)		7-Day Running Average % Release at Waterford	
	Total PCB	Tri+ PCB	Total PCB	Tri+ PCB	Total PCB	Tri+ PCB	Total PCB	Tri+ PCB
5/7/2014	0	0	42	16	0.0	0.0	0.00%	0.00%
5/8/2014	831	338	42	16	0.8	0.3	0.98%	1.06%
5/9/2014	692	199	42	16	1.5	0.5	1.20%	1.12%
5/10/2014	596	84	42	16	2.1	0.6	1.26%	0.97%
5/11/2014	530	0	0	0	2.6	0.6	1.57%	0.97%
5/12/2014	841	44	119	41	3.5	0.7	1.21%	0.64%
5/13/2014	830	0	119	41	4.3	0.7	1.06%	0.46%
5/14/2014	1,337	182	119	41	5.7	0.8	1.17%	0.50%
5/15/2014	1,328	83	119	41	7.0	0.9	1.09%	0.30%
5/16/2014	1,115	54	119	41	8.1	1.0	1.03%	0.20%
5/17/2014	2,654	519	119	41	10.8	1.5	1.20%	0.36%
5/18/2014	6,693	1,896	0	0	17.4	3.4	2.06%	1.14%
5/19/2014	4,783	1,116	204	68	22.2	4.5	2.34%	1.42%
5/20/2014	1,952	65	204	68	24.2	4.6	2.24%	1.31%
5/21/2014	2,509	192	204	68	26.7	4.8	2.17%	1.20%
5/22/2014	3,304	556	204	68	30.0	5.3	2.18%	1.24%
5/23/2014	1,843	241	204	68	31.8	5.6	2.08%	1.20%
5/24/2014	1,967	64	204	68	33.8	5.6	1.88%	1.01%
5/25/2014	1,900	0	0	0	35.7	5.6	1.49%	0.55%
5/26/2014	1,912	363	0	0	37.6	6.0	1.51%	0.43%
5/27/2014	794	111	189	62	38.4	6.1	1.42%	0.46%
5/28/2014	1,949	236	189	62	40.4	6.3	1.38%	0.48%
5/29/2014	2,937	556	189	62	43.3	6.9	1.36%	0.49%
5/30/2014	1,079	96	189	62	44.4	7.0	1.31%	0.45%
5/31/2014	2,013	331	189	62	46.4	7.3	1.33%	0.54%

**Table 2**  
**Summary of Daily PCB Load to Lower Hudson River during Phase 2 Year 4 Dredging Monitoring<sup>1</sup>**

Date	Net Load Past Waterford (g/day)		Mass Removed (kg)		Cumulative Net Load Past Waterford (kg)		7-Day Running Average % Release at Waterford	
	Total PCB	Tri+ PCB	Total PCB	Tri+ PCB	Total PCB	Tri+ PCB	Total PCB	Tri+ PCB
6/1/2014	1,923	0	0	0	48.3	7.3	1.33%	0.54%
6/2/2014	241	0	152	49	48.6	7.3	1.00%	0.37%
6/3/2014	2,382	57	152	49	50.9	7.4	1.18%	0.37%
6/4/2014	2,400	97	152	49	53.3	7.5	1.27%	0.34%
6/5/2014	2,186	123	152	49	55.5	7.6	1.24%	0.22%
6/6/2014	1,877	84	152	49	57.4	7.7	1.37%	0.23%
6/7/2014	1,102	0	152	49	58.5	7.7	1.33%	0.12%
6/8/2014	981	0	0	0	59.5	7.7	1.22%	0.12%
6/9/2014	530	22	133	42	60.0	7.7	1.28%	0.13%
6/10/2014	417	14	133	42	60.4	7.7	1.09%	0.12%
6/11/2014	716	65	133	42	61.1	7.8	0.91%	0.11%
6/12/2014	1,482	564	133	42	62.6	8.4	0.85%	0.28%
6/13/2014	934	0	133	42	63.6	8.4	0.75%	0.26%
6/14/2014	4,903	1,832	133	42	68.5	10.2	1.25%	1.00%
6/15/2014	3,009	553	0	0	71.5	10.7	1.50%	1.22%
6/16/2014	2,069	206	123	46	73.5	10.9	1.72%	1.27%
6/17/2014	1,846	122	123	46	75.4	11.1	1.92%	1.29%
6/18/2014	1,742	62	123	46	77.1	11.1	2.08%	1.27%
6/19/2014	1,223	134	123	46	78.4	11.3	2.08%	1.09%
6/20/2014	978	93	123	46	79.3	11.4	2.11%	1.11%
6/21/2014	1,608	232	123	46	80.9	11.6	1.70%	0.51%
6/22/2014	215	0	0	0	81.2	11.6	1.32%	0.31%
6/23/2014	140	0	130	45	81.3	11.6	1.04%	0.23%
6/24/2014	308	0	130	45	81.6	11.6	0.83%	0.19%
6/25/2014	897	0	130	45	82.5	11.6	0.71%	0.17%

**Table 2**  
**Summary of Daily PCB Load to Lower Hudson River during Phase 2 Year 4 Dredging Monitoring<sup>1</sup>**

Date	Net Load Past Waterford (g/day)		Mass Removed (kg)		Cumulative Net Load Past Waterford (kg)		7-Day Running Average % Release at Waterford	
	Total PCB	Tri+ PCB	Total PCB	Tri+ PCB	Total PCB	Tri+ PCB	Total PCB	Tri+ PCB
6/26/2014	1,623	279	130	45	84.1	11.9	0.75%	0.22%
6/27/2014	679	0	130	45	84.8	11.9	0.71%	0.19%
6/28/2014	638	0	130	45	85.4	11.9	0.58%	0.10%
6/29/2014	776	0	0	0	86.2	11.9	0.65%	0.10%
6/30/2014	352	0	249	90	86.6	11.9	0.59%	0.09%
7/1/2014	566	0	249	90	87.1	11.9	0.54%	0.08%
7/2/2014	762	0	249	90	87.9	11.9	0.47%	0.07%
7/3/2014	584	0	249	90	88.5	11.9	0.35%	0.00%
7/4/2014	578	0	0	0	89.1	11.9	0.38%	0.00%
7/5/2014	0	0	0	0	89.1	11.9	0.36%	0.00%
7/6/2014	0	0	0	0	89.1	11.9	0.28%	0.00%
7/7/2014	0	0	218	81	89.1	11.9	0.26%	0.00%
7/8/2014	1,312	108	218	81	90.4	12.0	0.35%	0.03%
7/9/2014	1,698	169	218	81	92.1	12.1	0.46%	0.08%
7/10/2014	1,482	135	218	81	93.5	12.3	0.58%	0.13%
7/11/2014	1,186	124	218	81	94.7	12.4	0.52%	0.13%
7/12/2014	1,189	140	218	81	95.9	12.5	0.52%	0.14%
7/13/2014	753	15	0	0	96.7	12.6	0.58%	0.14%
7/14/2014	453	0	235	81	97.1	12.6	0.61%	0.14%
7/15/2014	776	48	235	81	97.9	12.6	0.56%	0.13%
7/16/2014	847	69	235	81	98.7	12.7	0.49%	0.11%
7/17/2014	885	38	235	81	99.6	12.7	0.44%	0.09%
7/18/2014	1,004	69	235	81	100.6	12.8	0.42%	0.08%
7/19/2014	1,094	149	235	81	101.7	12.9	0.41%	0.08%
7/20/2014	1,378	186	0	0	103.1	13.1	0.46%	0.11%

**Table 2**  
**Summary of Daily PCB Load to Lower Hudson River during Phase 2 Year 4 Dredging Monitoring<sup>1</sup>**

Date	Net Load Past Waterford (g/day)		Mass Removed (kg)		Cumulative Net Load Past Waterford (kg)		7-Day Running Average % Release at Waterford	
	Total PCB	Tri+ PCB	Total PCB	Tri+ PCB	Total PCB	Tri+ PCB	Total PCB	Tri+ PCB
7/21/2014	720	48	244	75	103.8	13.2	0.47%	0.13%
7/22/2014	989	101	244	75	104.8	13.3	0.48%	0.14%
7/23/2014	839	89	244	75	105.7	13.4	0.48%	0.14%
7/24/2014	1,139	120	244	75	106.8	13.5	0.49%	0.16%
7/25/2014	1,084	112	244	75	107.9	13.6	0.50%	0.18%
7/26/2014	1,170	131	244	75	109.1	13.7	0.50%	0.17%
7/27/2014	1,504	210	0	0	110.6	13.9	0.51%	0.18%
7/28/2014	1,619	147	194	61	112.2	14.1	0.59%	0.21%
7/29/2014	2,183	224	194	61	114.4	14.3	0.70%	0.24%
7/30/2014	2,046	282	194	61	116.4	14.6	0.82%	0.30%
7/31/2014	1,949	260	194	61	118.4	14.8	0.91%	0.35%
8/1/2014	2,369	785	194	61	120.7	15.6	1.06%	0.54%
8/2/2014	1,440	236	194	61	122.2	15.9	1.13%	0.58%
8/3/2014	1,439	234	0	0	123.6	16.1	1.12%	0.59%
8/4/2014	955	129	270	82	124.6	16.2	1.00%	0.55%
8/5/2014	1,457	216	270	82	126.0	16.4	0.89%	0.52%
8/6/2014	1,448	215	270	82	127.5	16.7	0.80%	0.48%
8/7/2014	1,975	349	270	82	129.4	17.0	0.76%	0.48%
8/8/2014	1,488	218	270	82	130.9	17.2	0.66%	0.34%
8/9/2014	1,898	303	270	82	132.8	17.5	0.66%	0.34%
8/10/2014	1,309	395	0	0	134.1	17.9	0.65%	0.37%
8/11/2014	934	184	262	79	135.1	18.1	0.65%	0.38%
8/12/2014	905	128	262	79	136.0	18.2	0.62%	0.37%
8/13/2014	1,233	211	262	79	137.2	18.4	0.61%	0.37%
8/14/2014	1,833	300	262	79	139.0	18.7	0.60%	0.36%

**Table 2**  
**Summary of Daily PCB Load to Lower Hudson River during Phase 2 Year 4 Dredging Monitoring<sup>1</sup>**

Date	Net Load Past Waterford (g/day)		Mass Removed (kg)		Cumulative Net Load Past Waterford (kg)		7-Day Running Average % Release at Waterford	
	Total PCB	Tri+ PCB	Total PCB	Tri+ PCB	Total PCB	Tri+ PCB	Total PCB	Tri+ PCB
8/15/2014	2,335	289	262	79	141.4	19.0	0.66%	0.38%
8/16/2014	1,941	494	262	79	143.3	19.5	0.67%	0.42%
8/17/2014	1,575	259	0	0	144.9	19.8	0.68%	0.39%
8/18/2014	1,473	231	182	56	146.4	20.0	0.76%	0.42%
8/19/2014	1,552	371	182	56	147.9	20.4	0.84%	0.50%
8/20/2014	941	140	182	56	148.9	20.5	0.87%	0.51%
8/21/2014	1,756	260	182	56	150.6	20.8	0.92%	0.53%
8/22/2014	2,684	439	182	56	153.3	21.2	1.02%	0.61%
8/23/2014	3,546	516	182	56	156.8	21.7	1.24%	0.66%
8/24/2014	1,460	113	0	0	158.3	21.9	1.23%	0.61%
8/25/2014	1,549	118	435	133	159.8	22.0	1.00%	0.47%
8/26/2014	2,067	411	435	133	161.9	22.4	0.88%	0.41%
8/27/2014	4,926	828	435	133	166.8	23.2	0.97%	0.47%
8/28/2014	4,172	755	435	133	171.0	24.0	0.97%	0.49%
8/29/2014	3,746	1,013	435	133	174.8	25.0	0.91%	0.52%
8/30/2014	4,689	1,207	435	133	179.4	26.2	0.87%	0.56%
8/31/2014	2,823	767	0	0	182.3	27.0	0.92%	0.64%
9/1/2014	1,511	264	0	0	183.8	27.2	1.10%	0.79%
9/2/2014	2,198	456	198	56	186.0	27.7	1.24%	0.90%
9/3/2014	2,943	773	198	56	188.9	28.4	1.30%	1.02%
9/4/2014	2,165	637	198	56	191.1	29.1	1.37%	1.17%
9/5/2014	1,620	429	198	56	192.7	29.5	1.47%	1.26%
9/6/2014	1,575	256	198	56	194.3	29.8	1.50%	1.27%
9/7/2014	1,731	319	0	0	196.0	30.1	1.39%	1.11%
9/8/2014	1,138	191	193	63	197.2	30.3	1.13%	0.89%



**Table 2**  
**Summary of Daily PCB Load to Lower Hudson River during Phase 2 Year 4 Dredging Monitoring<sup>1</sup>**

Date	Net Load Past Waterford (g/day)		Mass Removed (kg)		Cumulative Net Load Past Waterford (kg)		7-Day Running Average % Release at Waterford	
	Total PCB	Tri+ PCB	Total PCB	Tri+ PCB	Total PCB	Tri+ PCB	Total PCB	Tri+ PCB
9/9/2014	1,078	256	193	63	198.2	30.5	1.04%	0.81%
9/10/2014	932	227	193	63	199.2	30.8	0.87%	0.65%
9/11/2014	739	103	193	63	199.9	30.9	0.76%	0.49%
9/12/2014	1,061	171	193	63	201.0	31.0	0.71%	0.41%
9/13/2014	1,234	202	193	63	202.2	31.2	0.68%	0.39%
9/14/2014	1,580	429	0	0	203.8	31.7	0.67%	0.42%
9/15/2014	880	149	130	49	204.7	31.8	0.69%	0.42%
9/16/2014	1,339	216	130	49	206.0	32.0	0.75%	0.43%
9/17/2014	1,049	159	130	49	207.0	32.2	0.81%	0.43%
9/18/2014	1,560	383	130	49	208.6	32.6	0.96%	0.53%
9/19/2014	874	144	130	49	209.5	32.7	1.01%	0.55%
9/20/2014	965	160	130	49	210.4	32.9	1.06%	0.56%
9/21/2014	731	102	0	0	211.2	33.0	0.95%	0.45%
9/22/2014	547	78	150	49	211.7	33.1	0.88%	0.43%
9/23/2014	688	105	150	49	212.4	33.2	0.78%	0.39%
9/24/2014	601	75	150	49	213.0	33.2	0.71%	0.36%
9/25/2014	529	70	150	49	213.5	33.3	0.57%	0.25%
9/26/2014	657	101	150	49	214.2	33.4	0.54%	0.24%
9/27/2014	633	122	150	49	214.8	33.5	0.49%	0.22%
9/28/2014	776	120	0	0	215.6	33.6	0.49%	0.23%
9/29/2014	865	139	130	45	216.5	33.8	0.54%	0.25%
9/30/2014	1,214	191	130	45	217.7	34.0	0.61%	0.29%
10/1/2014	1,086	157	130	45	218.8	34.1	0.68%	0.32%
10/2/2014	964	362	130	45	219.7	34.5	0.75%	0.43%
10/3/2014	817	122	130	45	220.5	34.6	0.79%	0.45%

**Table 2**  
**Summary of Daily PCB Load to Lower Hudson River during Phase 2 Year 4 Dredging Monitoring<sup>1</sup>**

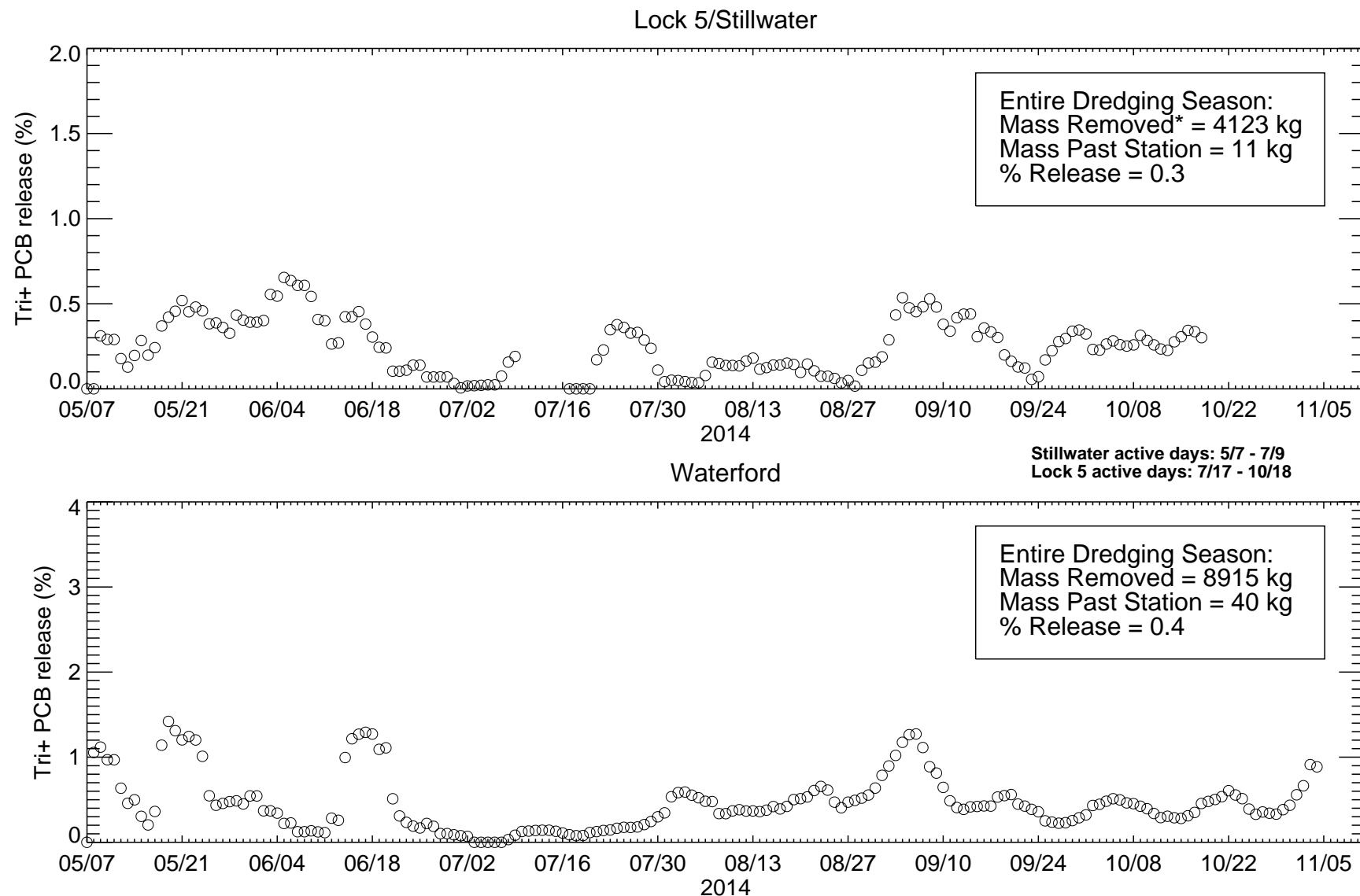
Date	Net Load Past Waterford (g/day)		Mass Removed (kg)		Cumulative Net Load Past Waterford (kg)		7-Day Running Average % Release at Waterford	
	Total PCB	Tri+ PCB	Total PCB	Tri+ PCB	Total PCB	Tri+ PCB	Total PCB	Tri+ PCB
10/4/2014	850	201	130	45	221.4	34.8	0.84%	0.48%
10/5/2014	1,204	197	0	0	222.6	35.0	0.89%	0.51%
10/6/2014	656	115	114	47	223.3	35.1	0.89%	0.50%
10/7/2014	726	108	114	47	224.0	35.2	0.84%	0.46%
10/8/2014	936	146	114	47	224.9	35.4	0.84%	0.45%
10/9/2014	1,100	290	114	47	226.0	35.7	0.88%	0.42%
10/10/2014	481	50	114	47	226.5	35.7	0.85%	0.39%
10/11/2014	475	53	114	47	227.0	35.8	0.81%	0.34%
10/12/2014	570	60	0	0	227.5	35.8	0.72%	0.29%
10/13/2014	760	171	137	51	228.3	36.0	0.71%	0.31%
10/14/2014	539	70	137	51	228.8	36.1	0.67%	0.29%
10/15/2014	646	132	137	51	229.5	36.2	0.61%	0.28%
10/16/2014	1,086	394	137	51	230.6	36.6	0.59%	0.31%
10/17/2014	1,116	181	137	51	231.7	36.8	0.65%	0.35%
10/18/2014	1,324	388	137	51	233.0	37.2	0.74%	0.46%
10/19/2014	1,008	135	0	0	234.0	37.3	0.79%	0.48%
10/20/2014	950	168	68	37	235.0	37.5	0.89%	0.50%
10/21/2014	454	91	68	37	235.4	37.6	0.96%	0.54%
10/22/2014	1,040	241	68	37	236.5	37.8	1.14%	0.61%
10/23/2014	1,293	181	68	37	237.8	38.0	1.32%	0.56%
10/24/2014	449	0	68	37	238.2	38.0	1.37%	0.51%
10/25/2014	631	45	68	37	238.8	38.0	1.43%	0.39%
10/26/2014	274	0	0	0	239.1	38.0	1.25%	0.33%
10/27/2014	886	170	50	21	240.0	38.2	1.29%	0.36%
10/28/2014	523	7	50	21	240.5	38.2	1.37%	0.34%

**Table 2**  
**Summary of Daily PCB Load to Lower Hudson River during Phase 2 Year 4 Dredging Monitoring<sup>1</sup>**

Date	Net Load Past Waterford (g/day)		Mass Removed (kg)		Cumulative Net Load Past Waterford (kg)		7-Day Running Average % Release at Waterford	
	Total PCB	Tri+ PCB	Total PCB	Tri+ PCB	Total PCB	Tri+ PCB	Total PCB	Tri+ PCB
10/29/2014	851	168	50	21	241.4	38.4	1.39%	0.33%
10/30/2014	865	210	50	21	242.2	38.6	1.33%	0.38%
10/31/2014	202	11	50	21	242.4	38.6	1.33%	0.44%
11/1/2014	458	128	50	21	242.9	38.7	1.35%	0.56%
11/2/2014	333	132	0	0	243.2	38.9	1.37%	0.66%
11/3/2014	1,502	701	113	45	244.7	39.6	1.30%	0.91%
11/4/2014	413	184	113	45	245.1	39.8	1.08%	0.89%

**Notes:**

1. Prepared by Anchor QEA, LLC
2. Net loads are zero whenever flow-based estimates of baseline concentrations exceeded measured concentrations
3. PCB load for days when PCB concentration data were not available were estimated by interpolation using adjacent days
4. Seven day running average percent release was calculated based on the approach described in 2014 Engineering Performance Standards
5. Tri+ PCB concentrations were estimated from Aroclor concentrations based on regressions described in Anchor QEA 2014



**Figure 1**

**Percent of Dredged Tri+ PCBs Released to the River and Transported to Far-field Stations**

*Notes: \*Mass removed at Lock 5/Stillwater is a total of daily mass removed when dredging was above 1 mile upstream of Stillwater or Lock 5 station (5/7-7/9; 7/17-10/18).*

*Values shown are as (7-day averaged PCB net load) / (7-day averaged PCB mass removed) for Tri+ PCBs. Data prior to dredge start date were excluded. Non-detects were set to 1/2 MDL. Duplicate data were averaged.*

*Average % release were calculated with less than 7 days of % release data for first six days, and for the days when data were not available.*

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